

Travel Model Improvement Program Webinar
Dynamic Traffic Assignment Session #3: No Sweat, A More Detailed Look at DTA (Part 1)

Krishna Patnam: What are your run times like?

Jeff Shelton: Run time for micro model (4 hours of simulation) took almost as long to run.

Maricopa Association of Govts: When will the direct conversion between DTA and micro model be available?

Jeff Shelton: We are currently working on the direct conversion now so we can bypass the macro and go directly to micro. Guesstimates on this feature is sometime in the spring 2010.

Deng Bang Lee: If the travel demand model applies hourly trip in motion factor, will the result be similar to the DTA model?

Yi-Chang Chiu: The main difference between the demand fine-sliced static model and the simulation-based DTA model can be summarized as (1) in demand fine-sliced static model, the assigned link volume from one time interval to the next is not temporally consistent, link volumes could be jumping without relevancy from one time interval to the next, but in DTA, since the temporal traffic loading and progress is being carried out by simulation, the realism is enforced, (2) the skim from DTA would be more realistic than static as the travel time is extracted from vehicles trajectory after simulation, so the skim is the actual travel time whereas in the static model the travel time is just the sum of snapshots of averaged link travel time.

Ido Juran: A few slides back you mentioned lane management strategies (e.g. HOT lanes, variable pricing) as an application. Given that the DTA model you are using is not lane-based, how would integrate the DTA and micro together for an application like this?

Jeff Shelton: For HOT/HOV lanes or variable pricing scenarios, you would need to model the managed lanes and the general purpose lanes independently so the mesoscopic model can differentiate between the different lanes types. For truck lane restrictions, you can run assignment in the DTA model and then transfer both the car and truck paths directly to the micro model. Once at the micro level, you can restrict trucks from an individual lane and still have all the vehicles following the same routes.

Robert Farley: A Demand model will differ from a meso/micro model in that the trips "exist" from Origin to destination, but the meso/micro model can show a "pulse" of volume pass through the system.

Jeff Shelton: That is a good way to put it Robert. A demand model is a static model and is not simulation-based and therefore cannot show differences in congestion levels during peak and non peak hours. Both meso and micro models are dynamic and can show the temporal distribution of vehicles at any given time. Slides 40 and 41 are a good representation of the differences between static (demand) models and DTA/micro models.

Ido Juran: Can you give some general idea of DTA run time and RAM usage?

Jeff Shelton: Ido, run time for DTA model (4 hours of simulation and 20 iterations) was approximately 2 hours with about 1GB RAM.